Proceedings of the Iowa Academy of Science

Volume 2 | Annual Issue Article 21

1894

Nitrogen Compounds of the Soil

D. B. Bisbee

and potash. With reference to available nitrogen its adaptability cannot be pronounced upon without further research.

The acknowledgements of the writer are due to Mr. O. H. Pagelsen and Mr. D. B. Bisbee, for their assistance in the above recorded work.

NITROGEN COMPOUNDS OF THE SOIL.

BY D. B. BISBEE.

(Abstract.)

In examining for ammonia a soil-extract, prepared by digesting soil for three days in dilute HCl, the author noticed that Schloesing's method (distilling the extract with excess of MgO) gave a continuous separation of ammonia, amounting in this case to .0024 per cent. Another portion of the extract was filtered after the addition of MgO and before boiling. In it the separation of ammonia ceased after boiling a comparatively short time, and the total separated was .0017 per cent. The evident inference is that "part of the amides in Schloesing's extract can be precipitated by magnesia; and, by the second method 'results are obtained which are much nearer the truth in respect to the ammonia of the soil than by the original Schloesing's method.'"

Kjeldahl's process for determining the total nitrogen in a soil-extract consists in boiling the extract with H_2SO_4 and salicylic acid till colorless, adding HgO and $KMnO_4$, and distilling with NaOH. The same results were obtained by reducing the nitrates, preferably with a zinc-copper couple, and distilling with a strong excess of alkaline permanganate.

From experiments with citric acid it was found that "a one per cent solution of citric acid dissolves a part of the nitrogen of the soil as amides and none as ammonia. If ammonia is in the soil citric acid either does not dissolve it or else converts it into amide-like bodies. These amides dissolved in citric acid are volatile at least in part. The volatile part is converted into ammonia by long boiling with dilute HCl, or by boiling a short time with alkaline permanganate."